RECOMMENDED INDIVIDUAL RESIDENCE

T & J PANEL

GROUND ABSORPTION, WASTEWATER

DISPOSAL SYSTEM

for

ROYAL POINTE - LOT 10
ROYAL POINTE SUBDIVISION
LANGTREE ROAD
IREDELL COUNTY, N.C.

JANUARY 9, 1992

Owner:

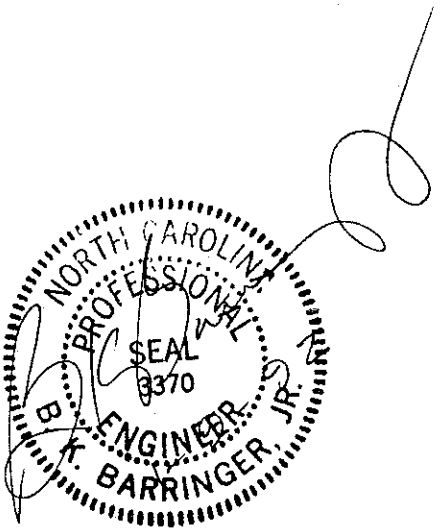
Waterside Investments, Inc.
19501 Hwy. 73 West, No. 14
Davidson, N.C. 28036

Prepared By:

B. K. Barringer, Jr., P.E.
N. C. Registration No. 3370

104 Westfield Center
Mooresville, N. C. 28115

Phone: (704) 664-7888
Fax: (704) 664-1778



T & J PANEL SYSTEM

ROYAL POINTE SUBDIVISION
T & J PANEL SYSTEM - LOT 10
IREDELL COUNTY

NARRATIVE:

It has been determined that Royal Pointe - Lot 10 does not have adequate suitable soil or available space necessary to accommodate a ground absorption system. An area at the rear of lots 16 and 17 have been designated for the nitrification field and repair area on lot 10. The septic tank and pump tank is to be located on lot 10 to accept gravity flow from the residence.

Effluent is to be pumped via force main along the right-of-way of Royal Pointe Way, then along a 10' recorded utility easement along the inside of lot 12, adjacent to the Mary Knox Atwell property, into lot 15, and then into the designated nitrification field area in lots 16 and 17.

Legal documents acceptable to the Iredell County Department of Health, including a three-party agreement among owner of lot 10, owners of lots 16 and 17, and Iredell County Department of Health, are to be prepared and recorded as a part of the permit. Additionally, a right-of-way encroachment agreement must be submitted to the D.O.T. and receive approved for all lines encroaching in the street right-of-way.

Any existing water wells within 50' of the designated area of the nitrification field must be abandoned according to Department of Health specifications.

The remaining area of lots 16 and 17 have been determined to meet minimum subdivision requirements and provide adequate area for nitrification field to support residences on those lots.

DESIGN CONSIDERATIONS:

THE PROPOSED THREE BEDROOM HOME will be serviced by community water located in the right-of-way of Royal Pointe Way.

LOCATION: The property is located on Royal Pointe Way, off Langtree Road. The proposed field is located approximately 500' north of Lot 10 at the rear of Lots 16 and 17.

TERRAIN: The property where the field is to be located slopes east to west at approximately 6%.

REFERENCE MATERIAL:

(1) DESIGN AND INSTALLATION (Manual)
OF LOW PRESSURE PIPE WASTE WATER TREATMENT SYSTEMS
By: Craig Cogger; Bobby L. Carlisle; Dennis Osborne; Ed Holland
Published by: UNC Sea Grant College Pub. UNC-SC-82-03, May, 1982.

(2) LAWS AND RULES FOR GROUND ABSORPTION SEWAGE DISPOSAL SYSTEMS.
SECTION .1956 OF THE N.C. Administrative Code: Title 10 Health
Services; Environmental Health; Subchapter 10a; Sanitation.
Published by: N.C. Dept. of Human Resources; July 1, 1982.
Paragraph .1956 (a)(ii)(B).

(3) EPA 625/1-80-012 Design Manual
Onsite Wastewater Treatment and Disposal System Oct.,1980;
Chapter 7.

RECOMMENDATIONS: Due to limited area, a precast porous block panel system (PPBPS) - T & J - is recommended for the location.

OWNERSHIP RESPONSIBILITY: It must be kept in mind that this system is designed to accept a moderate amount of waste water (which is called the EFFLUENT), in a minimal water absorbing soil.

Conservation measures must be undertaken by all members of the house hold to minimize the volume of waste water entering the disposal system, including, but not limited to, the following precautions:

(a) Provide water conserving plumbing fixtures within the facility; toilets shall be equal to **Eljer "Ultra-One/G", Sloan's "Flushmate"** or approved equal.

(b) Develop conservative water use habits;

(c) Monitor and maintain the system as necessary for proper operation;

(d) Check and pump the septic tank sludge on a regular basis of approximately every year if garbage disposal is included in the residence, or approximately every three years otherwise.

(e) Make rapid repairs to leaking plumbing fixtures and faucets.

(f) Avoid excessive watering of the lawn in the vicinity of the disposal field.

CONSTRUCTION SEQUENCE AND COMPONENTS OF THE SYSTEM

Refer to T & J Panel System's manufacturing and installment manual. Furnish and install all items required for a complete system in accordance with plans and specifications; for requirements of the County Dept. of Environmental Health (CDEH); the N. C. Dept. of Environmental Health (NCDEH); the N. C. Building Code, Plumbing Code and Electrical Code; and the National Electric Code. System must be properly installed by a qualified, competent contractor.

COMPONENTS OF SYSTEM

1. Two compartment septic tank
2. Pumping chamber
3. Submersible effluent pump and level controls
4. High water alarm signals (audible and visible)
5. Supply pipe
6. Ball valves
7. T & J 16" high panels & distribution laterals

CONSTRUCTION SEQUENCE:

(1) Lay out T & J, 16" high, Panel System network area and repair area with stakes and flagging to ten feet (minimum) beyond the limits of the network. As soon as the absorption area is designated, it should be flagged, roped off and isolated from construction traffic. This barrier should be maintained until the system is accepted by the Owner. Refer to site plan for the size of absorption area. The Engineer has previously flagged the general limits of the nitrification field. See site plans for flag locations.

(2) Prior to actually beginning construction of the system, carefully locate, lay out and identify disposal site, manifolds and the lateral panel piping networks, using a tripod mounted engineer's leveling instrument to accurately establish each lateral along a level contour. Note: Lateral panel runs which conflict with cut-off-in-place stumps or trees shall "snake" by with a 12" minimum trench clearance and then continue along its projection run. (The 6' minimum trench separation must be maintained.)

(3) Excavate for and construct curtain drain (if shown on the plan.)

(4) Excavate lateral network trenches 24" wide by 28" deep (see detail). Remove loose soil from bottom of trench.

(5) Install sand in bottom of the lateral trench to the proper depth of approximately 22" below finish ground level.

(6) Follow the manufacturer's guidelines for installing the T & J Panel System.

(Construction sequence - continued)

(7) All joints in lateral and the manifold piping shall be water tight connections to insure that the only source of the water seepage from the system is through the orifices as designed. See layout and details. Carefully install manifold and lateral network according to the attached designed layout. A larger diameter protective sleeve with cap or approved box with lid shall be placed over the turned up lateral and positioned level with the ground surface (so as not to be damaged by mowing machine.)

(8) Carefully backfill manifold trenches to finish grade with clean (debris free earth (no stone).

(9) Leave absorption area with a raked surface, ready for grassing.

(10) The installation contractor shall stabilize the area of construction by seeding all bare areas according to attached Seeding Specification and shall keep the planted area watered and mulched until such time that a hardy stand of grass is established.

(11) The septic tank shall consist of a 1,500 gallon capacity, reinforced, precast concrete tank with full baffle and shall have easy access to each chamber from ground level for checking and pumping. The first chamber of the septic tank shall consist 2/3 to 3/4 of the volume of the total tank and the baffle shall contain a horizontal opening across the tank at about midway its height. Locate the septic tank at such height as to provide approximately 8" of cover soil over top of the tank.

(12) The dosing tank shall consist of a 1,000 gallon capacity, reinforced, precast concrete tank without baffle and shall have a concrete mounting pad (concrete blocks) for accommodating the pump. Provide access for entry into the tank directly over the pump location, and extending 6" above final grade. Use a 30" diameter concrete well casing and concrete well cap.

(13) Piping and fittings within the nitrification field shall be PR160 (SDR26) PVC. Force main and pipe within DOT R/W shall be SDR21. Glue for all PVC pipe joints shall be as recommended by the pipe manufacturer.

(14) PUMP: The submerged pump shall be Model WHRE10 manufactured by F.E.Meyers Co., Ashland, OH, or equal, 1 hp, 230v/1ph; capable of pumping 23 gallons per minute at a 43' head.

(15) PUMP ON-OFF water level control switch shall by Myers, Model MLC-20, mercury switch, with three prong, piggy back plug.

(16) HIGH WATER ALARM SWITCH shall be equal to Myers, model FLCA-30, mercury switch, red colored ball with support bracket.

(17) HIGH WATER ALARM CONTROL BOX shall be equal to Myers, model FLCA CA-SS4 with connection box having buzzer alarm, on, off, test switch with terminal block for all connections. Control box shall be supplied by two separate 115 volt circuits, one plug circuit, and one alarm circuit.

(Construction Sequence - continued)

(18) A "HOME OWNER'S WARNING SIGN" shall be located within the house to inform the owner of what action to take in case the "High Water Alarm" is activated. This sign shall contain the name, address, telephone number, and emergency telephone number of the person to contract immediately upon malfunction of the system.

(19) PUMP AND CONTROLS: Details of pump installation are shown on the plan. The pump must be placed on two concrete blocks next to each other on the bottom of the tank. This prevents the pumping of any solid particles which can clog the LPP system. A piece of nylon rope or other non corrodible material should be attached to the pump and to the outlet pipe for lifting the pump in and out of the chamber. (The PVC outlet pipe is too fragile to support the pump.)

Controls are fastened to the outlet pipe with clamps or brackets supplied by the manufacturer. The lower level control or "pump-off" must be positioned above the pump, so that the pump remains submerged at all times. The upper level control "pump-on" is positioned to pump a specified volume of effluent. The high water control float is then mounted about 3" above the upper pump-on control. (Note: Care must be taken to insure that floats do not become fouled by other components in the tank such as the electric power cord or the lifting rope.)

The pump outlet pipe should be connected to the supply manifold with a threaded PVC union (or dresser coupling) to allow quick removal. The gate valves must also be installed as shown on the plan to allow final adjustment of the pressure. If effluent will be pumped down hill, a 1/4" siphon-breaker hole must be drilled in the bottom of the supply line before it leaves the pump tank. This breaks any vacuum in the system and prevents the inadvertent siphoning of effluent out of the tank. This hole is very important.

(20) ELECTRICAL CONNECTIONS: The pump and high water alarm must be placed on separate electrical circuits. (If the pump circuit fails, the alarm must still be able to operate.) Follow the manufacturers' recommendations for the proper fuses or circuit-breakers. All electrical connections must be made outside the pumping chamber. Power cords from the pumps and controls should be plugged into a NEMA approved outdoor receptacle mounted outside of the pumping chamber. The receptacle must not be located inside the pumping chamber due to the corrosive and explosive gasses that may form from the sewage.

Electrical connections may be made inside the pumping tank only if wired inside a sealed, water tight box. Some level control switches have a box built into the housing, but are more expensive than the plug-in devices.

Wiring between the pumping chamber and the house should meet State and local code requirements. A lightning arrester is recommended to protect the pump and controls from electrical surges.

(Construction Sequence - continued)

(21) PROPER OPERATION CHECK: After all components have been installed and connected, the system should be checked for proper operation. With electrical power turned off, fill the pumping chamber with water from a garden hose (or allow effluent to accumulate) until the liquid rises to the level of the high-water alarm float. Turn on the electrical power. The alarm light should go on in the house, and the pump should start operating. The alarm light should go off when the liquid level falls below the high-water float. The pump should turn off when the liquid reaches the lowest float control. Be sure the pump is still completely submerged.

(22) PRESSURE HEAD ADJUSTMENT: The pressure head must be adjusted to match that specified in the design. The pressure head is measured as the height liquid will rise above the turn-up elbow when the pump is running. To adjust the head:

(a) Glue a 4' length of pipe (preferably clear) to a threaded adapter that will screw onto the turn-up adapters. (Call this the "test tube".)

(b) Replace the turn-up cap with the "test tube".

(c) Turn the power on to allow liquid to rise in the "test tube".

(d) Adjust the ball valve beginning at the end of each lateral until the effluent reaches the desired height in the "test tube". Remember to include the distance below the ground surface to the lateral line when measuring the height. The pressure head should be 3' for each line. This is the height above the lateral the liquid should be in the temporary "test tube". Continue to adjust valves until all test tubes have an equal amount of liquid.

(23) FINAL LANDSCAPING: After the T & J System is installed, the following should be checked to insure that the system will not be overloaded with excess rain water and run off:

(a) The distribution field is shaped to shed rain water and is free of low area.

(b) Gutter and downspout drains are directed away from the system.

Any problems should be corrected before approving the system.

Finally, the entire area should be planted with grass according to specifications.

DESIGN SPECIFICATIONS - T & J PANEL SYSTEM
Royal Pointe Subdivision - Lot 10
Royal Pointe Way - Iredell County, NC
January 7, 1992

Daily design waste flow:	360 gpd
Square footage:	1200 sf
Septic tank size:	1,500 gal. (2 compartment)
Pumping tank size:	~~1,000 gal.~~ 1500gal
Effluent loading rate:	0.3 gpd/sf
Total linear feet and diameter of laterals	200 ft. of 1¼" dia. PVC and T&J 16" high panels
Total length and diameter of supply manifold:	850 lf - 2" dia. PVC
Number and length of laterals:	2 laterals at 100 lf
Number of panels:	46
Hole size:	5/32"
Hole spacing:	1 hole per panel
Total number of holes:	46
Flow per hole at 3' head	0.50 gpm
Flow rate through the system:	23 gpm
Elevation head (pump to end of manifold):	30'
Pressure head:	3'
Friction head:	10'
Total head:	43'
Pump requirements:	23.0 gpm at 43'; use Myers 1 hp WHRE10 pump
Pump sized for system & repair	Yes
Dosing volume:	165 gal.
Depth of water pumped per dose:	6.5" (or as calculated for each tank)
Pump run per dose:	7.2 min.
Check valve:	yes
Syphon break hole:	no

SEEDING SPECIFICATIONS

SLOPES 3:1 or FLATTER

1. Apply agricultural lime at the rate of 90 lb/1000 sf.
2. Apply 10-10-10 commercial fertilizer at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule and application rate:

DATE	TYPE	PLANTING RATE
Aug 15 - Nov 1	Tall Fescue	200 lb/ac or 7 lb/1000 sf
Nov 1 - Mar 1*	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Abruzzi Rye	25 lb/ac or ½ lb/1000 sf
Mar 1 - Apr 15	Tall Fescue	200 lb/ac or 7 lb/1000 sf
Apr 15 - Jul 30	Hulled Common or Bermuda	30 lb/ac or 1 lb/1000 sf
Jul 15 - Aug 15	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Brown Millet or	35 lb/ac or ⅞ lb/1000 sf
	Sorghum-Sudan Hybrids	30 lb/ac or ¾ lb/1000 sf

4. Mulch with straw applied at the rate of 75-100 lb/1000 sf.

* Heavily mulched during January - March period.

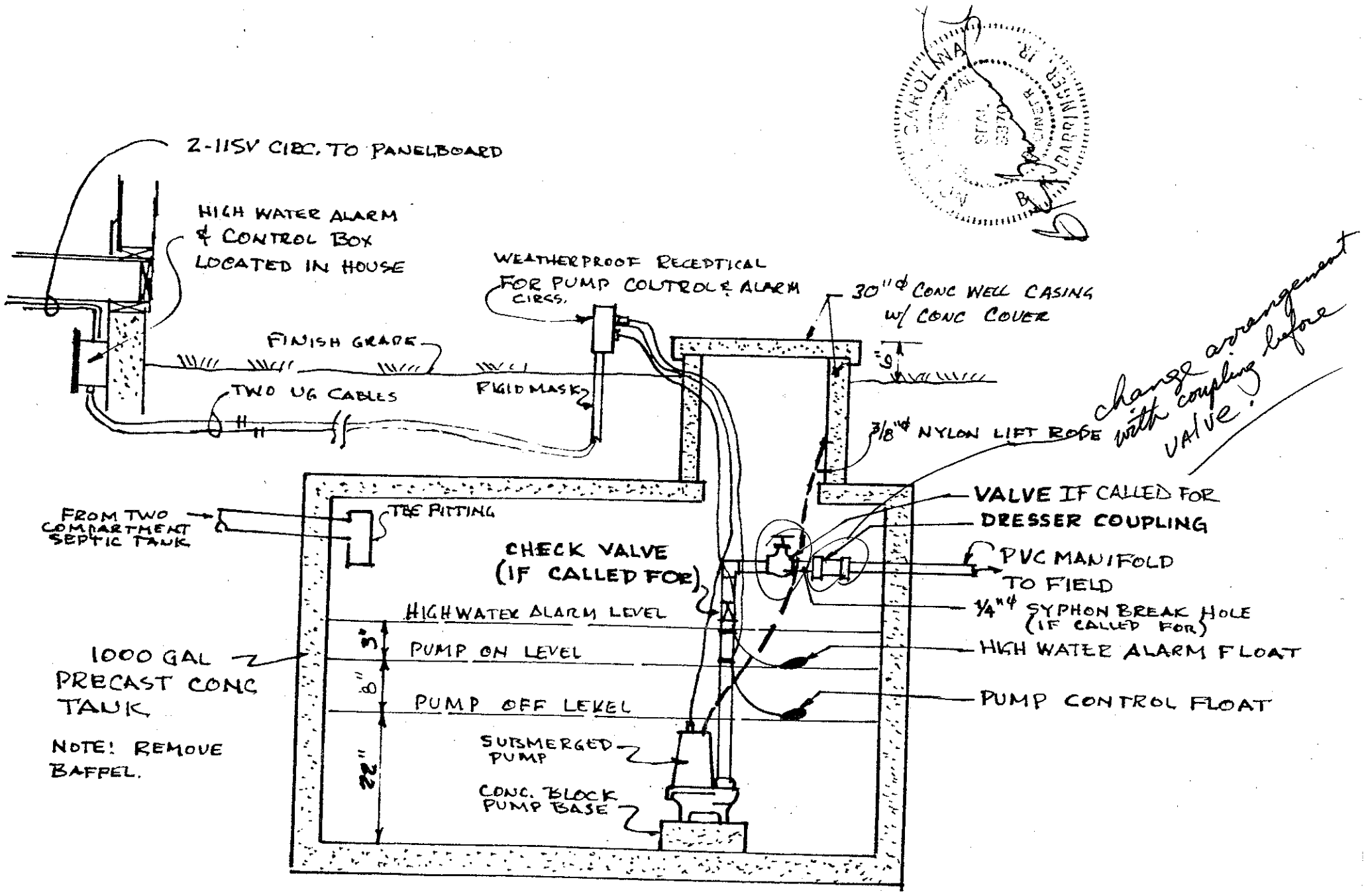
SLOPES GREATER THAN 3:1 TO 2:1

1. Apply agricultural lime at the rate of 90 lb/1000 sf.
2. Apply 10-10-10 commercial fertilizer at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule and application rate.

DATE	TYPE	PLANTING RATE
Mar 1 - Jun 1	Sericea Lespediza (scarified) &	50 lb/ac or 11 lb/1000 sf
Mar - Apr	Add Tall Fescue or	150 lb/ac or 3½ lb/1000 sf
Mar - Jun	Add Weeping Lovegrass	5 lb/ac or ⅛ lb/1000 sf
Jun - Sep 1**	Tall Fescue and	60 lb/ac or 1½ lb/1000 sf
	Brown Top Millet	35 lb/ac or ⅞ lb/1000 sf
	Sorghum Sudan Hybrids	30 lb/ac or ¾ lb/1000 sf
Sep - Mar 1	Sericea Lespediza (unhulled-unscarified)	70 lb/ac or 1¾ lb/1000 sf
	Tall Fescue	150 lb/ac or 3½ lb/1000 sf
	Millet or Sudan	20 lb/ac or ½ lb/1000 sf

** Temporary - Reseed September 1 at recommended rates.

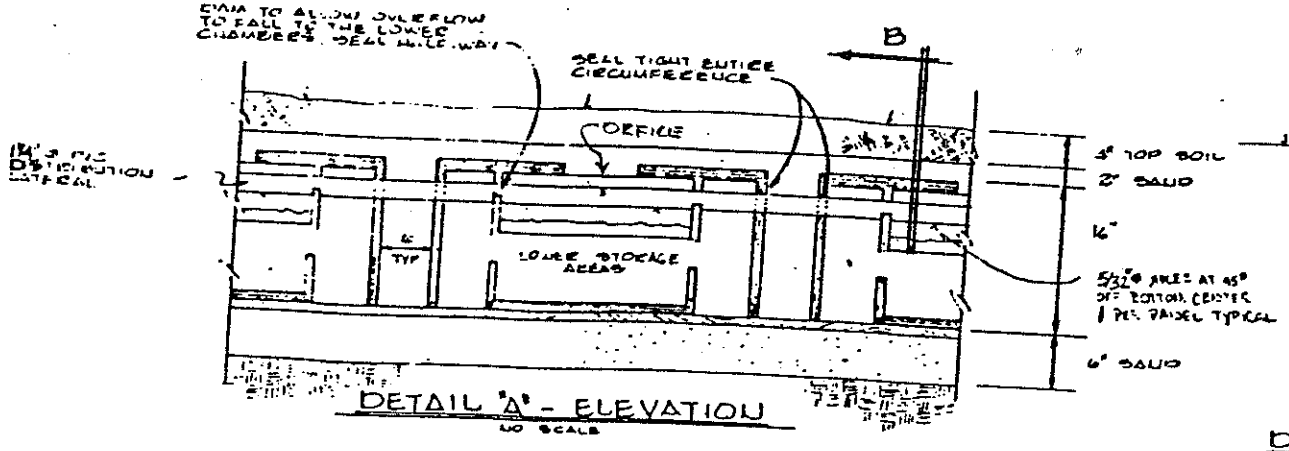
4. Mulch with 3" straw applied at the rate of 50-90 lb/1000 sf and anchor with asphalt emulsion tack coat applied at the rate of 5-7 gal/1000 sf or 200-300 gal/ac.



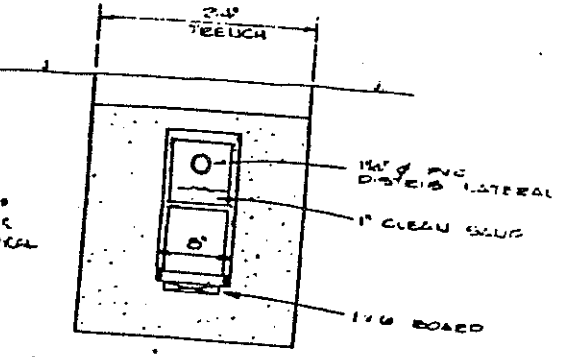
PUMPING CHAMBER DIAGRAM

NO SCALE

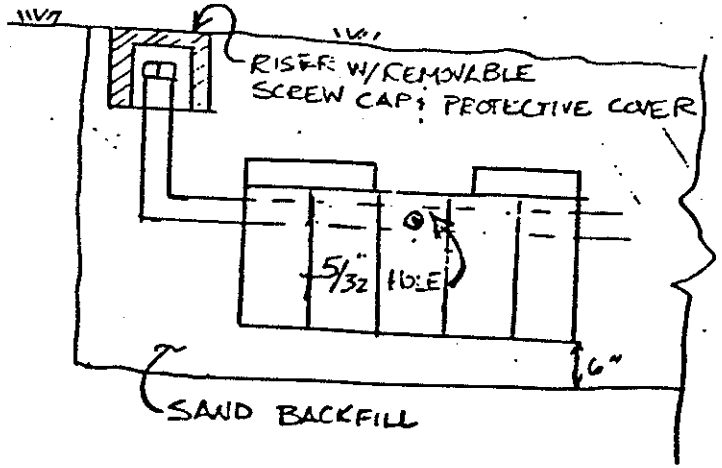
T & J PANEL AS MFG'D BY STATESVILLE CONCRETE PRODUCTS



DETAIL "A" - ELEVATION

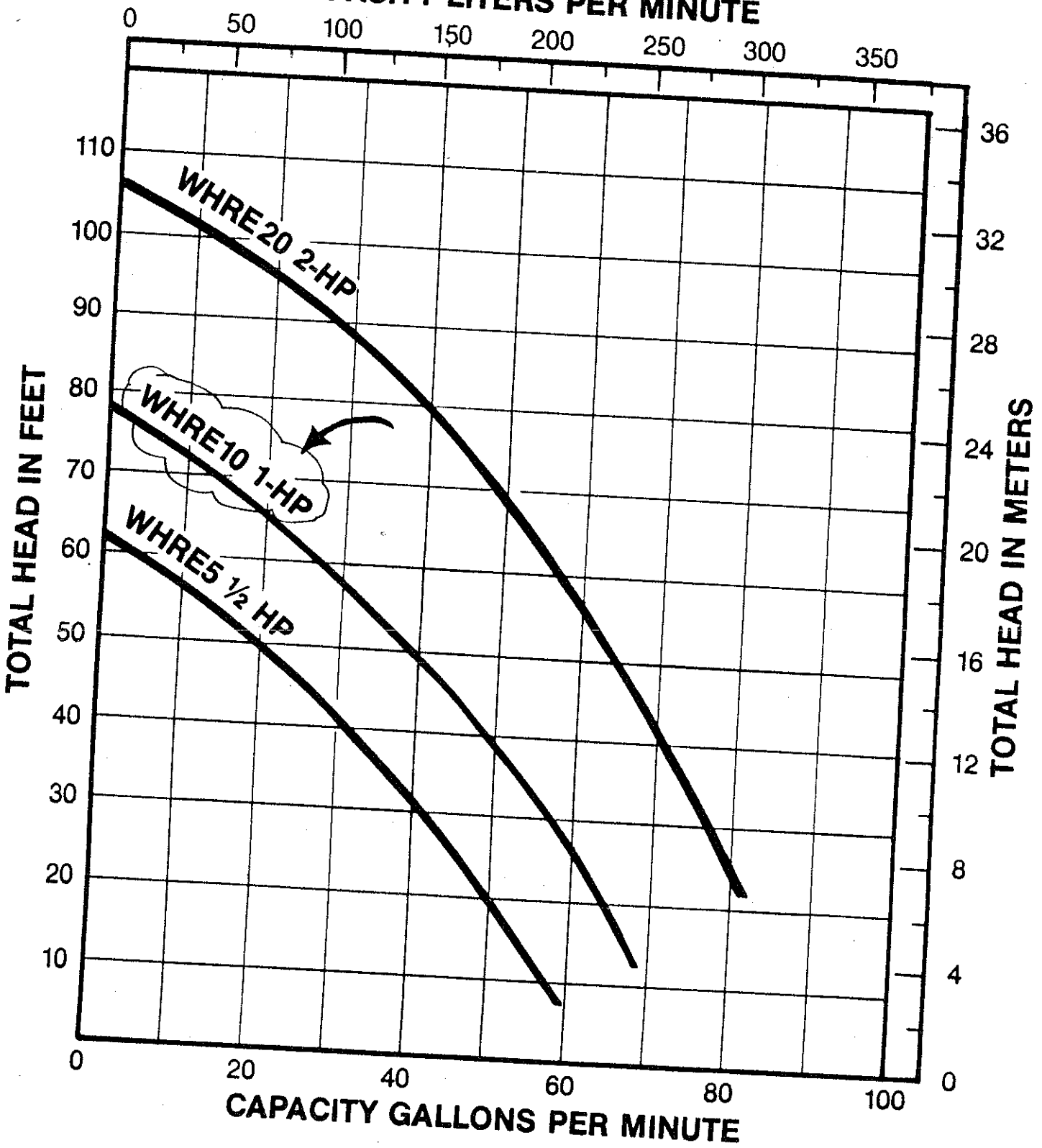


DETAIL "B" - SECTION



B. K. BARRINGER, JR., P.E.
104 Westfield Center Telephone (704) 664-7888
MOORESVILLE, NORTH CAROLINA 28115

PERFORMANCE CURVE
WHRE SERIES EFFLUENT PUMPS



F.E. MYERS CO.
400 ORANGE STREET, ASHLAND, OH 44805
DIVISION OF McNEIL CORPORATION